

# Attachment A to Resolution No. R10-XXX

## Amendment to the Water Quality Control Plan – Los Angeles Region to incorporate the TMDL for Indicator Bacteria in the Santa Clara River Estuary and Reaches 3, 5, 6, and 7

Adopted by the California Regional Water Quality Control Board, Los Angeles Region on July 8, 2010.

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#### Chapter 7. Total Maximum Daily Loads (TMDLs) Santa Clara River Estuary and Reaches 3, 5, 6, and 7 Indicator Bacteria TMDL

This TMDL was adopted by the Regional Water Quality Control Board on July 8, 2010.

This TMDL was approved by:

The State Water Resources Control Board on **[Insert Date]**.  
The Office of Administrative Law on **[Insert Date]**.  
The U.S. Environmental Protection Agency on **[Insert Date]**.

This TMDL is effective on **[Insert Date]**.

The following tables include the elements of this TMDL.

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**Table 7-36.1. Santa Clara River Estuary and Reaches 3, 5, 6, and 7 Indicator Bacteria TMDL: Elements**

Element	Key Findings and Regulatory Provisions																																	
<b>Problem Statement</b>	Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use designated for the Santa Clara River (SCR) Estuary and Reaches 3, 5, 6, and 7. Recreating in waters with elevated bacterial indicator densities has long been associated with adverse human health effects. Specifically, local and national epidemiological studies demonstrate that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.																																	
<b>Numeric Target</b>  (Interpretation of the numeric water quality objective, used to calculate the waste load and load allocations)	<p>The TMDL will have multi-part numeric targets based on the bacteria water quality objectives for marine and fresh waters designated for water contact recreation (REC-1) set forth in Chapter 3. Both single-sample and geometric mean objectives apply.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Numeric Targets</th> <th style="text-align: center;">SCR Estuary (Marine REC-1)</th> <th style="text-align: center;">SCR Reaches 3, 5, 6 and 7 (Freshwater REC-1)</th> </tr> </thead> <tbody> <tr> <td><i>Single Sample</i></td> <td></td> <td></td> </tr> <tr> <td>E. coli</td> <td>NA</td> <td>235/100ml</td> </tr> <tr> <td>Fecal coliform</td> <td>400/100ml</td> <td>NA</td> </tr> <tr> <td>Enterococcus</td> <td>104/100ml</td> <td>NA</td> </tr> <tr> <td>Total coliform*</td> <td>10,000/100ml</td> <td>NA</td> </tr> <tr> <td><i>Geometric mean</i></td> <td></td> <td></td> </tr> <tr> <td>E. coli</td> <td>NA</td> <td>126/100ml</td> </tr> <tr> <td>Fecal coliform</td> <td>200/100ml</td> <td>NA</td> </tr> <tr> <td>Enterococcus</td> <td>35/100ml</td> <td>NA</td> </tr> <tr> <td>Total coliform</td> <td>1,000/100ml</td> <td>NA</td> </tr> </tbody> </table> <p>*Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1. NA: not applicable.</p> <p>The Basin Plan objectives and these targets are based on an acceptable health risk for recreational waters of 8-19 illnesses per 1,000 exposed individuals, as recommended by the US EPA (USEPA, 1986).</p> <p>To implement the single sample bacteria objectives for waters designated REC-1, and to set allocations based on the single sample targets, an allowable number of exceedance days is set for marine and fresh waters. The numeric targets in the TMDL are expressed as 'allowable exceedance days' since bacterial density and the frequency of exceedances is most relevant to public health.</p> <p>The allowable number of exceedance days is based on the more stringent of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data in the subject reach. This ensures that bacteriological water quality is at</p>	Numeric Targets	SCR Estuary (Marine REC-1)	SCR Reaches 3, 5, 6 and 7 (Freshwater REC-1)	<i>Single Sample</i>			E. coli	NA	235/100ml	Fecal coliform	400/100ml	NA	Enterococcus	104/100ml	NA	Total coliform*	10,000/100ml	NA	<i>Geometric mean</i>			E. coli	NA	126/100ml	Fecal coliform	200/100ml	NA	Enterococcus	35/100ml	NA	Total coliform	1,000/100ml	NA
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	<p>least as good as that of a largely undeveloped system and that there is no degradation of existing water quality. This approach recognizes that there are natural sources of bacteria that may cause or contribute to exceedances of the single sample objectives and that it is not the intent of the Regional Board to require treatment or diversion of natural creeks or to require treatment of natural sources of bacteria from undeveloped areas.</p> <p>For the single sample targets, the Estuary and Reaches 3, 5, 6, and 7 are assigned an allowable number of exceedance days for dry weather and wet weather (defined as days with 0.1 inch of rain or greater and the three days following the rain event) as set forth in Table 7-36.2</p> <p>The geometric mean targets may not be exceeded at any time.</p>
<b>Source Analysis</b>	<p>The significant contributors of bacteria loading to the SCR and Estuary are dry- and wet-weather urban runoff discharges from the storm water conveyance system. Mass emission data collected by MS4 Permittees show elevated levels of bacteria in the river. Data from natural landscapes in the region indicate that open space loading is not a significant source of bacteria. Data from storm drains and channels draining urban areas show elevated levels of bacteria, indicating that urban areas are a source. Data from throughout the Los Angeles Region further demonstrate that bacteria concentrations are significantly greater in developed areas. Based on this information, staff concludes that runoff from urban areas served by the storm drain system is a significant source of bacteria.</p> <p>Other point and nonpoint sources were analyzed and found to be less significant or there were not enough data to quantify their contribution. However, all sources are considered potential sources and are assigned allocations accordingly.</p>
<b>Waste Load Allocations (for point sources)</b>	<p>MS4 permittees are assigned wasteload allocations (WLAs) equal to allowable exceedances days listed in Table 7-36.2 and interim WLAs equal to allowable exceedance days listed in Table 7-36.3. Compliance with interim WLAs will be assessed using in-stream monitoring. Compliance with final WLAs will be assessed using both in-stream monitoring and outfall monitoring as described in the monitoring section.</p> <p>Permittees that discharge to Reaches 1 and 2 have WLAs based on allowable exceedance days for the Estuary. Permittees that discharge to Reach 3 or above have WLAs based on allowable exceedance days for Reaches 3, 5, 6, and 7.</p> <p>The WLAs for the Saugus water reclamation plant (WRP), Valencia WRP, Fillmore wastewater treatment plant (WTP), Santa Paula water reclamation facility (WRF), Ventura WRF, and Newhall WRP are set</p>

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	<p>equal to a 7-day median of 2.2 MPN/100 mL of <i>E. coli</i> or a daily max of 2.2 MPN/100 mL of <i>E. coli</i> multiplied by the discharge rate at the time of sampling to ensure zero (0) allowable exceedance days of the single sample targets for both dry and wet weather and no exceedances of the geometric mean targets.</p> <p>General NPDES permits, individual NPDES permits, the Statewide Industrial Stormwater General Permit, the Statewide Construction Activity Stormwater General Permit, and the Statewide Stormwater Permit for Caltrans Activities are assigned WLAs of zero (0) allowable exceedance days of the single sample targets for both dry and wet weather and no exceedances of the geometric mean targets. Compliance with an effluent limit based on the bacteria water quality objectives will be used to demonstrate compliance with the WLA.</p>
<b>Load Allocations (for nonpoint sources)</b>	<p>Load allocations (LAs) are equal to allowable exceedance days listed in Table 7-36.2. Interim LAs are equal to allowable exceedance days listed in Table 7-36.3.</p> <p>Sources that discharge to Reaches 1 and 2 have LAs based on allowable exceedance days for the Estuary. Sources that discharge to Reach 3 or above have LAs based on allowable exceedance days for Reaches 3, 5, 6, and 7.</p>
<b>Margin of Safety</b>	<p>An implicit margin of safety was assumed by directly applying the water quality standards and implementation procedures as WLAs and LAs. This ensures that there is little uncertainty about whether meeting the TMDLs will result in meeting the water quality standards. An implicit margin of safety is incorporated in the allocations through the use of a conservative assumption of no (0) bacterial decay in discharges from storm drain to the receiving water when determining compliance with allocations.</p>
<b>Seasonal Variations and Critical Conditions</b>	<p>Seasonal variations are addressed by developing separate allocations for dry weather and wet weather based on public health concerns and observed natural background levels of exceedance of bacterial indicators.</p> <p>The critical condition for bacteria loading is during wet weather. This is because intermittent or episodic loading from sources such as urban runoff can have maximal impacts at high (i.e. storm) flows. Local and Bight-wide shoreline monitoring data show a higher percentage of daily exceedance of the single sample targets during wet weather, as well as more severe bacteriological impairments indicated by higher magnitude exceedances and exceedances of multiple indicators. Based on monitoring, this also appears to be the case for the SCR Estuary and Reaches 3, 5, 6, and 7.</p> <p>The 90th percentile storm year in terms of wet days at a rain gage in the</p>

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	<p>SCR watershed was used as the reference year. The 90th percentile year was selected for several reasons. First, selecting the 90th percentile year avoids an untenable situation where the reference system is frequently out of compliance. Second, selecting the 90th percentile year allows responsible jurisdictions and responsible agencies to plan for a 'worst-case scenario', as a critical condition is intended to do.</p>
<b>Implementation</b>	<p>The regulatory mechanisms used to implement the TMDL will include general NPDES permits, individual NPDES permits, MS4 Permits covering jurisdictions within the SCR watershed, the Statewide Industrial Storm Water General Permit, the Statewide Construction Activity Storm Water General Permit, the Statewide Stormwater Permit for Caltrans Activities, the Conditional Waiver for Irrigated Lands, WDRs, waivers of WDRs, the authority contained in Sections 13263, 13267, and 13269 of the Cal. Water Code, and other appropriate mechanisms.</p> <p>WLAs for point sources will be implemented through NPDES permits. Each NPDES permit assigned a WLA shall be reopened or amended at re-issuance, in accordance with applicable laws, to incorporate the assumptions and requirements of applicable WLAs as permit requirements.</p> <p><b>MS4 Permittees</b></p> <p>The cities of Santa Clarita, Fillmore, Santa Paula, and Ventura, and the Counties of Los Angeles and Ventura are responsible for MS4 WLAs. Cities and counties that have co-mingled storm water are jointly and severally responsible for meeting the WLAs assigned to MS4 discharges. Responsible parties must provide an Implementation Plan to the Regional Board outlining how each intends to individually or cooperatively achieve compliance with the WLAs. The report shall include implementation methods, an implementation schedule, proposed milestones, and proposed outfall monitoring to determine compliance. Proposed milestones will be considered by the Regional Board as potential permit conditions when the MS4 is reopened or reissued. For responsible jurisdictions and agencies who will be proposing wet-weather load-based compliance at MS4 outfalls, the plan shall include an estimate of existing load and the allowable load from MS4 outfalls to attain the allowable number of exceedance days in-stream. The plan shall include a technically defensible quantitative linkage to the WLAs. The plan shall include quantitative estimates of the water quality benefits provided by the proposed implementation approach.</p> <p><b>Non-MS4 Permittees</b></p> <p>Other dischargers are individually responsible for their WLAs.</p>

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	<p><b>Nonpoint Sources</b></p> <p>LAs for irrigated agricultural lands will be implemented through requirements in the Conditional Waiver for Irrigated Lands (Order No. R4-2005-0080) or other order that are consistent with the LAs. LAs for onsite wastewater treatment systems will be implemented through WDRs or waivers of WDRs. LAs for other nonpoint sources, such as horses/livestock, aquaculture, onsite wastewater treatment systems, and golf courses, will be implemented through the Nonpoint Source Implementation and Enforcement Policy.</p> <p>The LAs for irrigated agricultural lands can be achieved by the implementation of on-farm best management practices (BMPs), which may include buffer crops, filter strips and sedimentation basins. The estimated costs for buffer crops, filter strips, and sedimentation basins are \$373/acre, \$1002/acre, and \$10,000/acre, respectively. There may be funding available through the Natural Resources Conservation Service for the BMPs listed and others developed for the region, as well as technical advice for implementation. There is also funding available through CWA Section 319h grants. For the LAs issued to horses/livestock, land managers can use various incentives and regulatory approaches to encourage riders to use and abide by local restrictions and regulations.</p>
<b>Monitoring</b>	<p><b>MS4 Permittees</b></p> <p>Responsible jurisdictions and agencies for the MS4 WLAs are jointly responsible for developing and implementing a comprehensive in-stream monitoring plan. The monitoring plan should include all applicable bacteria water quality objectives and the sampling frequency must be adequate to assess compliance with the 30-day geometric mean objectives. Responsible jurisdictions and agencies may build upon existing monitoring programs in the SCR watershed when developing the bacteria water quality monitoring plan. At a minimum, at least one sampling station shall be located in each impaired reach.</p> <p>Responsible jurisdictions and agencies for the MS4 WLAs shall submit an outfall monitoring plan as part of their implementation plan. The outfall monitoring plan shall propose an adequate number of representative outfalls to be sampled, a sampling frequency, and protocol for enhanced outfall monitoring as a result of an in-stream exceedance. Responsible jurisdictions and agencies can use existing outfall monitoring station in the Ventura MS4 permit, where appropriate for both the permit and TMDL objectives.</p> <p><u>Monitoring to Determine Compliance</u></p> <p>Responsible jurisdictions and agencies shall assess compliance at the</p>

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	<p>outfall monitoring sites identified in the implementation plan. Compliance shall be based on the allowable number of exceedance days, except in wet-weather, compliance can alternatively be based on an allowable load.</p> <p>Responsible jurisdictions and agencies must also assess compliance at in-stream monitoring sites. If the number of exceedance days is greater than the allowable number of exceedance days, then the responsible jurisdictions and agencies shall conduct additional outfall monitoring, beyond the routine outfall monitoring proposed in the implementation plan. If the collective outfall monitoring shows attainment of WLAs, then MS4 discharges shall not be held responsible for in-stream exceedances for this time period.</p> <p><b>Non-MS4 Permittees</b></p> <p>NPDES Permittees other than MS4 dischargers shall conduct monitoring for all applicable bacteria water quality objectives to ensure that they are attaining WLAs and water quality objectives are being met. NPDES permits for the Saugus and Valencia WRPs shall include effluent monitoring for <i>E. coli</i> and the NPDES permit for the Ventura WRF shall include effluent monitoring for total coliform, fecal coliform, and enterococcus.</p> <p><b>Nonpoint Sources</b></p> <p>The Conditional Waiver for Irrigated Lands shall require bacteria monitoring for discharges from irrigated agricultural lands.</p> <p>Monitoring shall be implemented as part of WDR and waiver requirements, and through implementation of the Nonpoint Source Implementation and Enforcement Policy, for other nonpoint sources.</p>

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**Table 7-36.2 Santa Clara River Estuary and Reaches 3, 5, 6, and 7 Indicator Bacteria TMDL: Allowable Exceedance Days<sup>1,2,3</sup>.**

Time Period	Santa Clara River Reaches 3, 5, 6, & 7	Santa Clara River Estuary
Dry Weather	5 allowable exceedance days of single sample objectives  0 allowable exceedances of geometric mean objectives	Not Applicable
Wet Weather	16 allowable exceedance days of single sample objectives  0 allowable exceedances of geometric mean objectives	25 allowable exceedance days of single sample objectives  0 allowable exceedances of geometric mean objectives
Summer Dry Weather (April 1 – October 31)	Not Applicable	10 allowable exceedance days of single sample objectives  0 allowable exceedances of geometric mean objectives
Winter Dry Weather (November 1 – March 31)	Not Applicable	12 allowable exceedance days of single sample objectives  0 allowable exceedances of geometric mean objectives

<sup>1</sup> Allowable exceedance days calculated by the following equation: Allowable Exceedance Days = WQO Exceedance Probability in Reference System(s) x Number of Days during 1995.

<sup>2</sup> Consistent with the Santa Monica Bay Beaches TMDL, where the fractional remainder for the calculated allowable exceedance days exceeds 1/10th then the number of days are rounded up (e.g., 4.12 is rounded up to 5). In instances where the tenth decimal place for the allowable exceedance days (or weeks or months) is lower than 1/10th then the number of days are rounded down (e.g., 4.02 is rounded down to 4).

<sup>3</sup> The calculated number of exceedance days assumes that daily sampling is conducted. To determine the number of allowable exceedances for less frequent sampling, a ratio is used.

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**Table 7-36.3 Santa Clara River Estuary and Reaches 3, 5, 6, and 7 Indicator Bacteria TMDL: Interim Allowable Exceedance Days<sup>1,2,3</sup>.**

Time Period	Santa Clara River Reaches 3, 5, 6, & 7	Santa Clara River Estuary
Dry Weather	17 allowable exceedance days of single sample objectives	Not Applicable
Wet Weather	61 allowable exceedance days of single sample objectives	62 allowable exceedance days of single sample objectives
Summer Dry Weather (April 1 – October 31)	Not Applicable	150 allowable exceedance days of single sample objectives
Winter Dry Weather (November 1 – March 31)	Not Applicable	49 allowable exceedance days of single sample objectives

<sup>1</sup> Allowable exceedance days calculated by the following equation: Allowable Exceedance Days = WQO Exceedance Probability in Reference System(s) x Number of Days during 1995.

<sup>2</sup> Consistent with the Santa Monica Bay Beaches TMDL, where the fractional remainder for the calculated allowable exceedance days exceeds 1/10th then the number of days are rounded up (e.g., 4.12 is rounded up to 5). In instances where the tenth decimal place for the allowable exceedance days (or weeks or months) is lower than 1/10th then the number of days are rounded down (e.g., 4.02 is rounded down to 4).

<sup>3</sup> The calculated number of exceedance days assumes that daily sampling is conducted. To determine the number of allowable exceedances for less frequent sampling, a ratio is used.

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**Table 7-36.4 Santa Clara River Estuary and Reaches 3, 5, 6, and 7 Indicator Bacteria TMDL: Implementation Schedule**

Deadline	Task
Effective date of the TMDL	WLAs assigned to non-MS4 point sources must be attained. Interim LAs and MS4 WLAs apply.
1 year after the effective date of the TMDL	Responsible jurisdictions and agencies for the MS4 WLAs must submit a comprehensive in-stream bacteria water quality monitoring plan for the SCR Watershed. The plan must be approved by the Executive Officer before the monitoring data can be considered during the implementation of the TMDL. Once the coordinated monitoring plan is approved by the Executive Officer, monitoring shall commence within 6 months.
3 years after the effective date of this TMDL	Responsible jurisdictions and agencies for the MS4 WLAs shall submit a draft Implementation Plan to the Regional Board outlining how each intends to cooperatively or individually achieve compliance with the WLAs. The report shall include implementation methods, an implementation schedule, proposed milestones, and outfall monitoring.
4 years after the effective date of this TMDL	The Regional Board shall reconsider this TMDL if: <ul style="list-style-type: none"> <li>(1) monitoring and any voluntary local reference system studies justify a revision, or</li> <li>(2) US EPA publishes revised recommended bacteria criteria.</li> </ul>
5 years after the effective date of this TMDL	Responsible jurisdictions and agencies for the MS4 WLAs shall provide a verbal update to the Regional Board on the progress of TMDL implementation.
6 months after receipt of Regional Board comments on the draft Implementation Plan	Responsible jurisdictions and agencies for the MS4 WLAs shall submit a final Implementation Plan and begin additional outfall monitoring.
8 years after effective date of this TMDL	For SCR Estuary: Achieve compliance with the applicable LAs and MS4 WLAs, expressed in terms of geometric mean objectives and allowable exceedance days of the single sample objectives for summer dry weather (April 1 to October 31) and winter dry weather (November 1 to March 31).  For SCR Reaches 3, 5, 6, and 7: Achieve compliance with

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	the applicable LAs and MS4 WLAs, expressed in terms of geometric mean objectives and allowable exceedance days of the single sample objectives and for dry weather.
14 years after the effective date of this TMDL	For SCR Estuary and Reaches 3, 5, 6, and 7: Achieve compliance with the applicable LAs and MS4 WLAs, expressed in terms of geometric mean objectives and allowable exceedance days of the single sample objectives for wet weather.